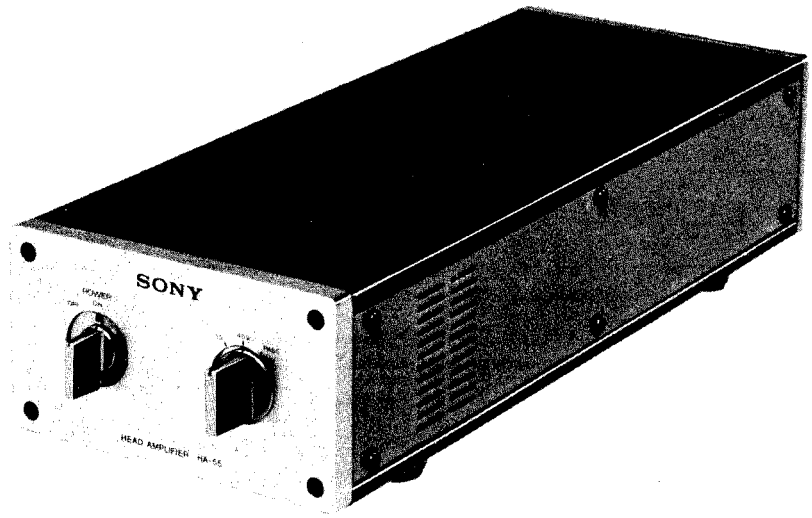
HA-55

Canadian Model
AEP Model



HEAD AMPLIFIER

SPECIFICATIONS

Power Requirement:	120 V ac, 60 Hz (Canadian model) 110, 120, 220, or 240 V ac adjustable, 50/60 Hz (AEP model)
Power Consumption:	8 W (Canadian model) 10 W (AEP model)
Voltage Gain:	27 dB
Equivalent Input Noise Level:	−157 dBV (RIAA + A curve, closed-circuit)
Harmonic Distortion:	0.003 % (1 kHz)
Frequency Response:	6 − 500,000 Hz $^{+0}_{-1}$ dB
Maximum Input Capability:	20 mV
Input Impedance:	25 Ω/100 Ω
Dimensions:	Approx. 135 (w) x 80 (h) x 345 (d) mm $5\frac{3}{8}$ (w) x $3\frac{1}{8}$ (h) x $13\frac{5}{8}$ (d) inches
Weight:	Approx. 3.2 kg, 7 lb

SAFETY-RELATED COMPONENT WARNING!!

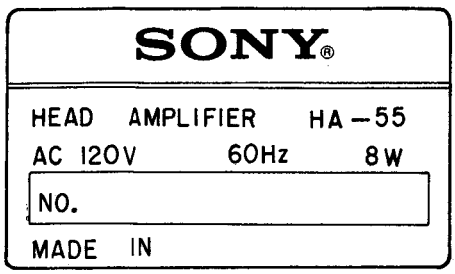
COMPONENTS IDENTIFIED BY SHADING AND ⚠ MARK ON THE SHCEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SONY®
SERVICE MANUAL

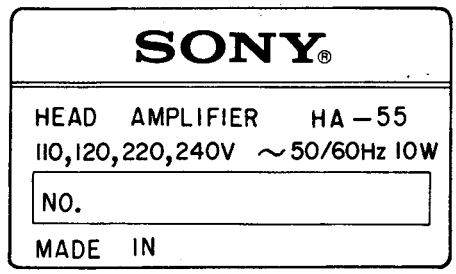
1212

- MODEL IDENTIFICATION
  – Specification Label –

Canadian model

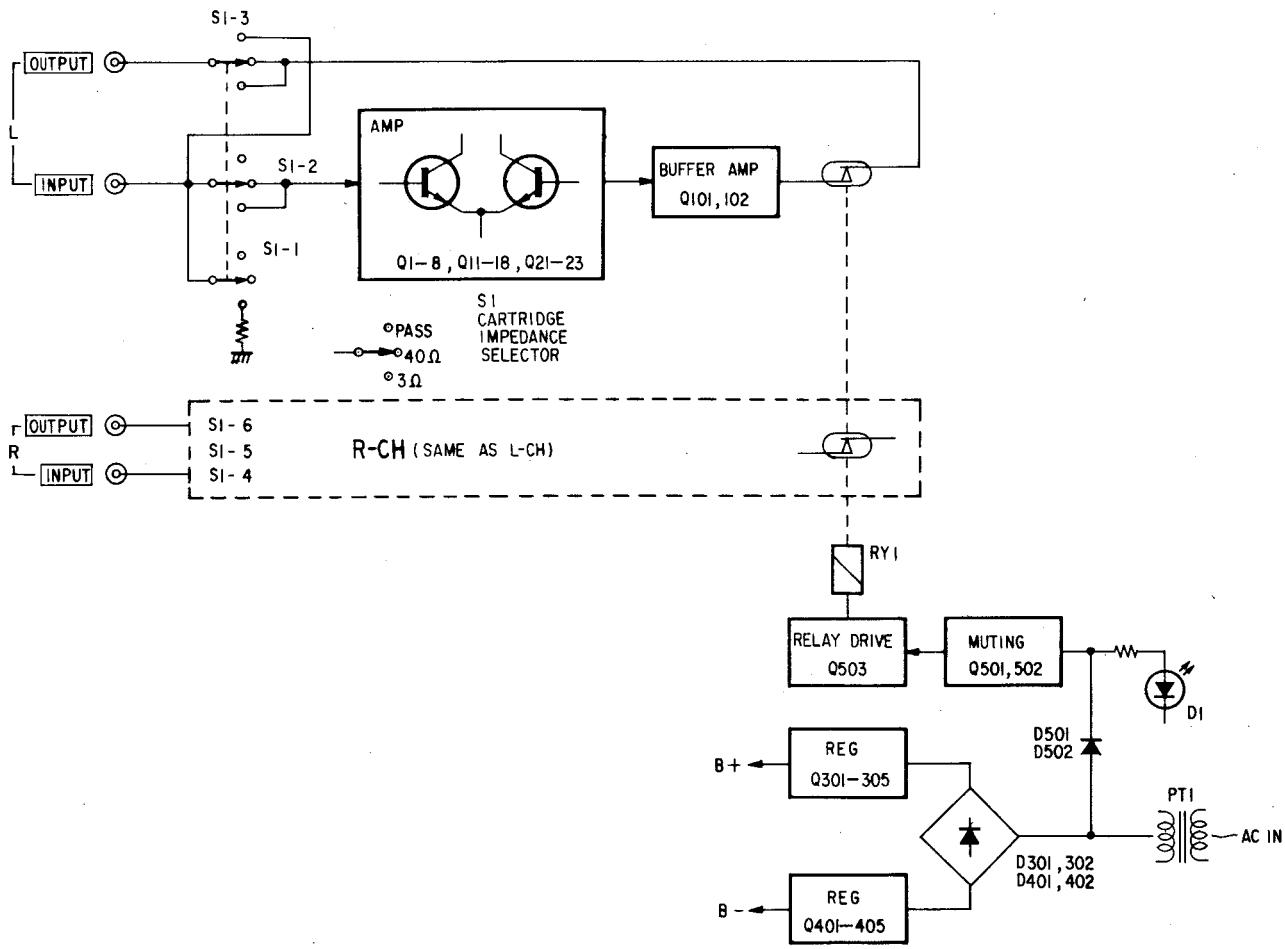


AEP model



SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM

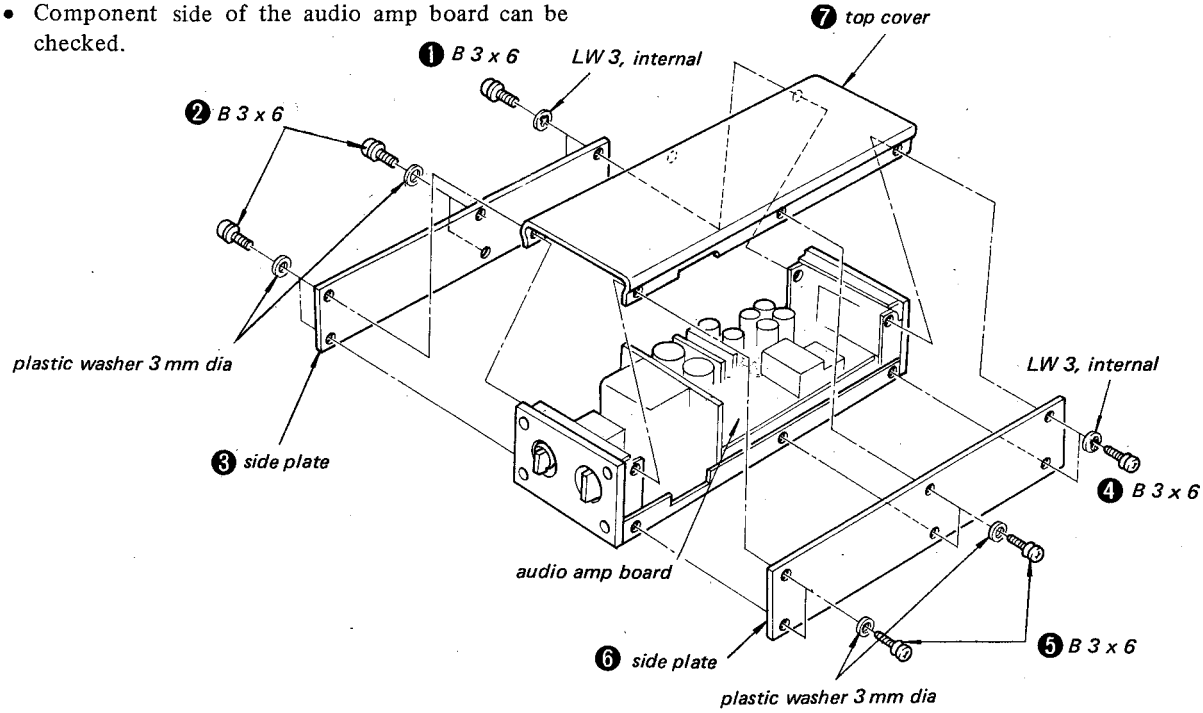


SECTION 2
DISASSEMBLY

Remove the parts in the numerical order.

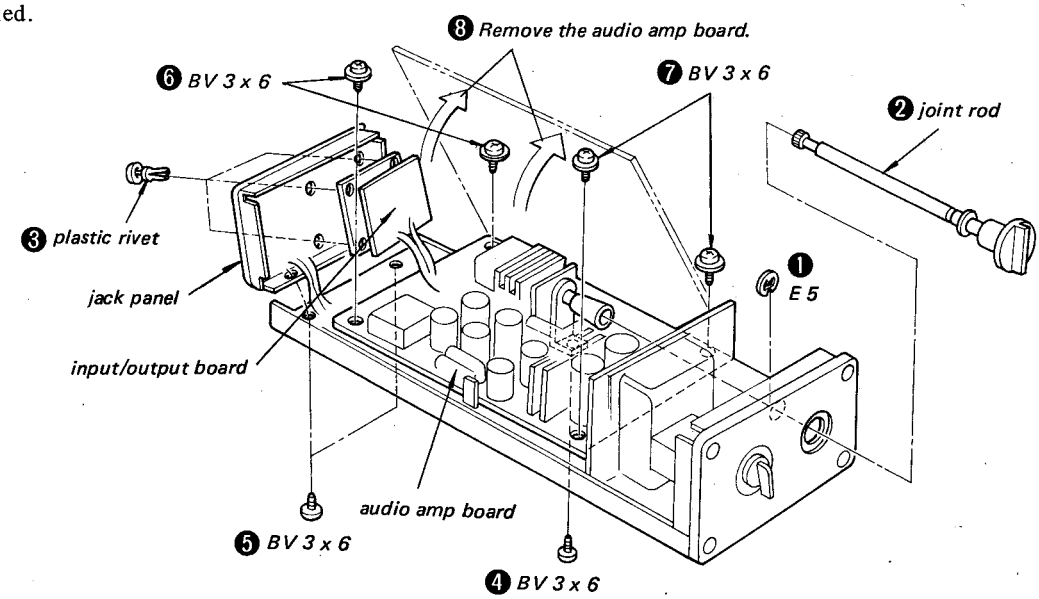
SIDE PLATE AND TOP COVER REMOVAL

- Component side of the audio amp board can be checked.

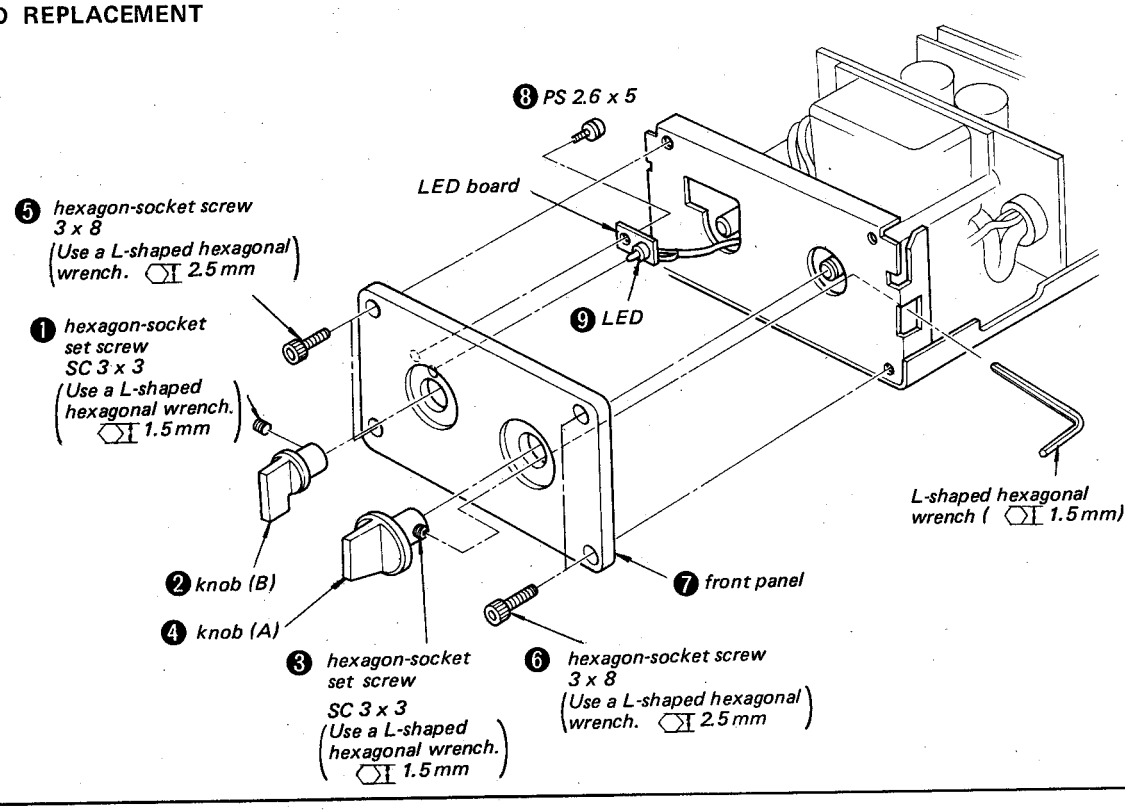

❼ top cover
❶ B 3 x 6
LW 3, internal
❷ B 3 x 6
plastic washer 3 mm dia
❸ side plate
LW 3, internal
❹ B 3 x 6
audio amp board
❻ side plate
❺ B 3 x 6
plastic washer 3 mm dia

AUDIO AMP BOARD REMOVAL

- Conductor side of the audio amp board can be checked.



LED REPLACEMENT

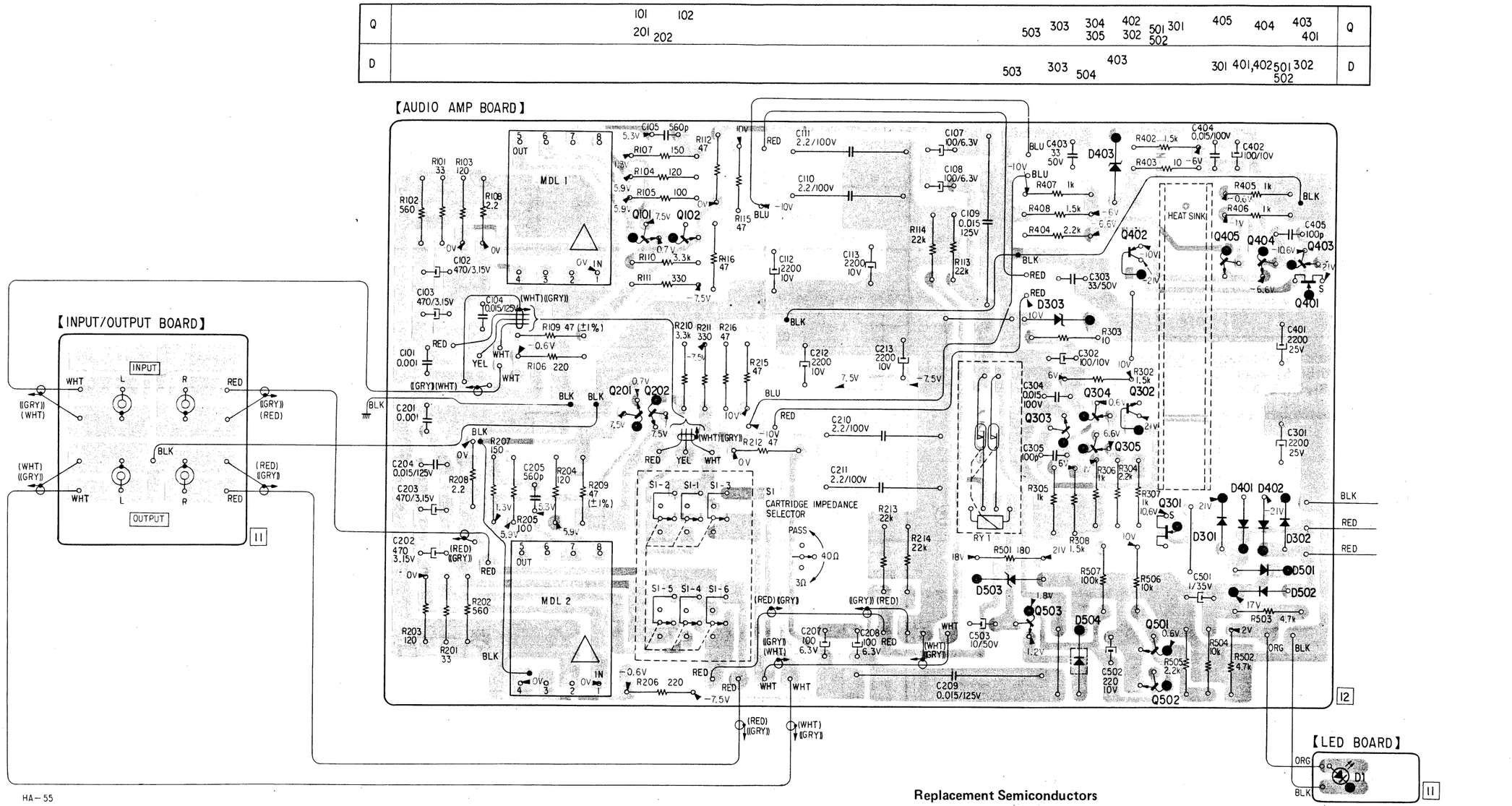

8 PS 2.6 x 5
LED board
5 hexagon-socket screw 3 x 8 (Use a L-shaped hexagonal wrench. 2.5 mm)
9 LED
1 hexagon-socket set screw SC 3 x 3 (Use a L-shaped hexagonal wrench. 1.5 mm)
L-shaped hexagonal wrench (1.5 mm)
2 knob (B)
7 front panel
4 knob (A)
3 hexagon-socket set screw SC 3 x 3 (Use a L-shaped hexagonal wrench. 1.5 mm)
6 hexagon-socket screw 3 x 8 (Use a L-shaped hexagonal wrench. 2.5 mm)

SECTION 3

DIAGRAMS

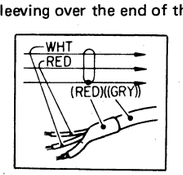
3-1. MOUNTING DIAGRAM — Audio Amp Board —

— Conductor Side —



Note:

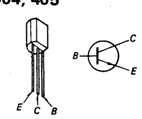
- Color code of sleeving over the end of the jacket.



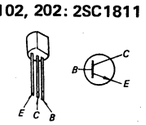
- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.
- : B+ pattern
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions with a VOM (20 kΩ/V).

Replacement Semiconductors

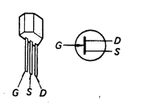
Q101, 201, 303, Q404, 405: 2SC1775



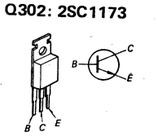
Q102, 202: 2SC1811



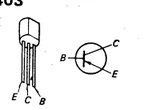
Q301, 401: 2SK42-2



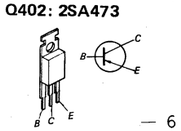
Q302: 2SC1173



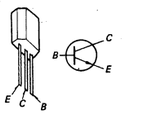
Q304, 305, Q403: 2SA872



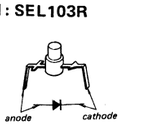
Q402: 2SA473



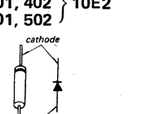
Q501—503: 2SC634A



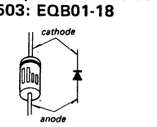
D1: SEL103R



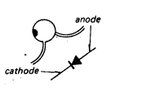
D301, 302, D401, 402, D501, 502: 10E2



Q303, 403: EQB01-06
Q503: EQB01-18



D504: VD1220



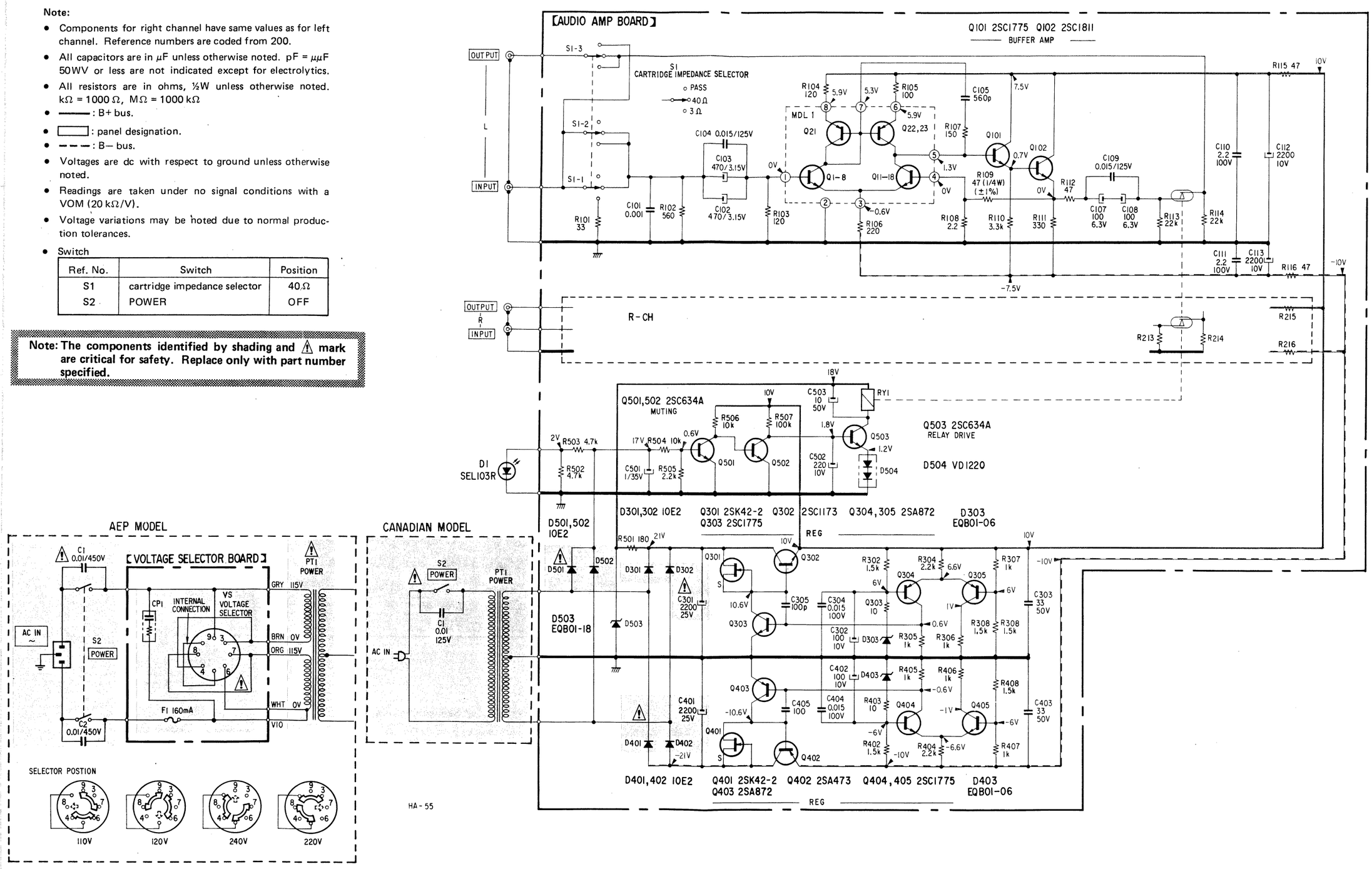
3-2. SCHEMATIC DIAGRAM

Note:

- Components for right channel have same values as for left channel. Reference numbers are coded from 200.
- All capacitors are in μF unless otherwise noted. pF = μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ½W unless otherwise noted. kΩ = 1000 Ω, MΩ = 1000 kΩ
- ——: B+ bus.
- ▭: panel designation.
- – – –: B– bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions with a VOM (20 kΩ/V).
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
S1	cartridge impedance selector	40Ω
S2	POWER	OFF

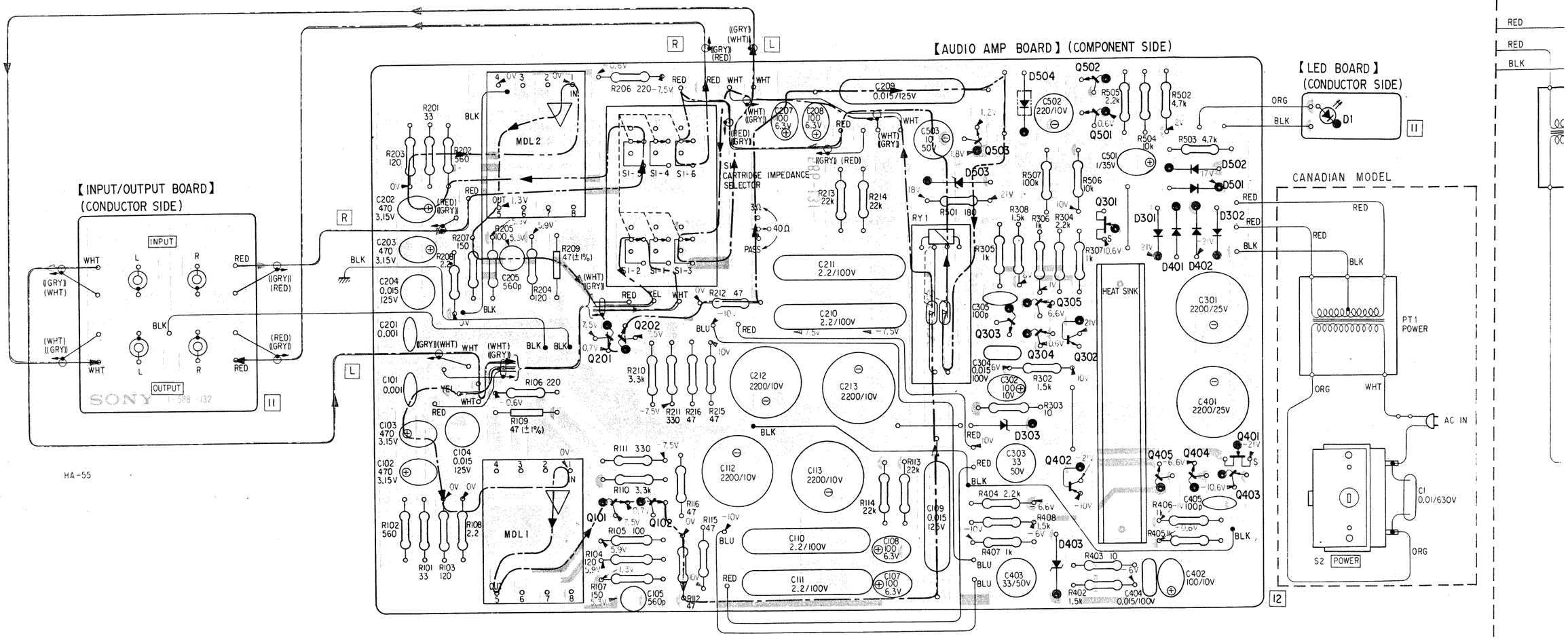
Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.



3-3. MOUNTING DIAGRAM

– Component Side –

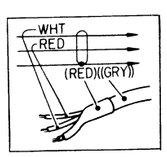
Q	201, 202 101 102 503 303 305 304 302 402 502 501 301 405 404 401 403	Q
D	503 303 504 403 502 501 301 401 402 302	D



HA-55

Note:

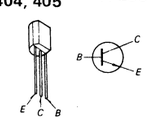
- Color code of sleeving over the end of the jacket.



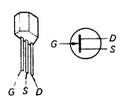
- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.
- : B+ pattern
- Signal Path
  —— - ——►: L-CH
  —— - ——►: R-CH
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions with a VOM (20 kΩ/V).

Replacement Semiconductors

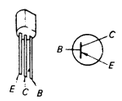
Q101, 201, 303, Q404, 405: 2SC1775



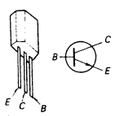
Q301, 401: 2SK42-2



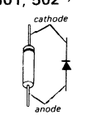
Q304, 305, Q403: 2SA872



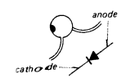
Q501–503: 2SC634A



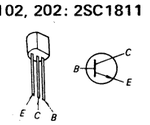
D301, 302, D401, 402, D501, 502: 10E2



D504: VD1220



Q102, 202: 2SC1811



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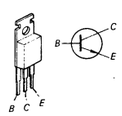

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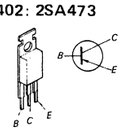
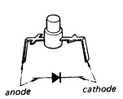
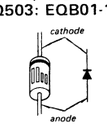


D1: SEL103R



Q303, 403: EQB01-06
Q503: EQB01-18



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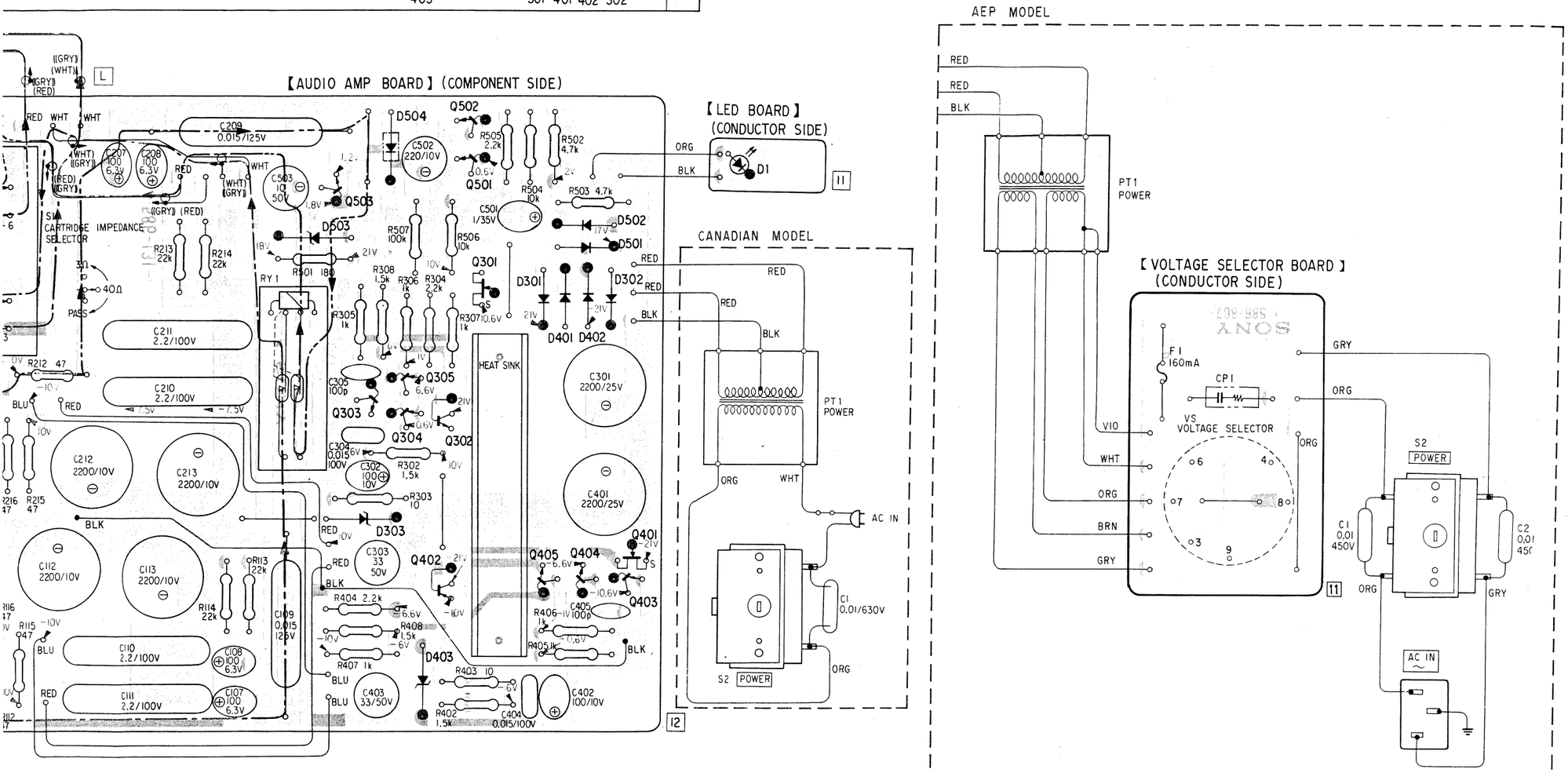
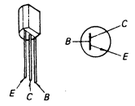
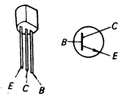


Replacement Semiconductors

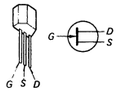
Q101, 201, 303, Q404, 405: 2SC1775



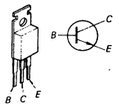
Q102, 202: 2SC1811



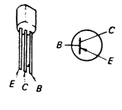
Q301, 401: 2SK42-2



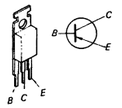
Q302: 2SC1173



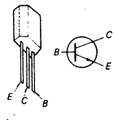
Q304, 305, Q403: 2SA872



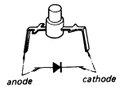
Q402: 2SA473



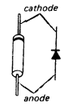
Q501–503: 2SC634A



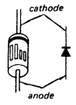
D1: SEL103R



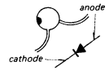
D301, 302, D401, 402, D501, 502: 10E2



Q303, 403: EQB01-06
Q503: EQB01-18



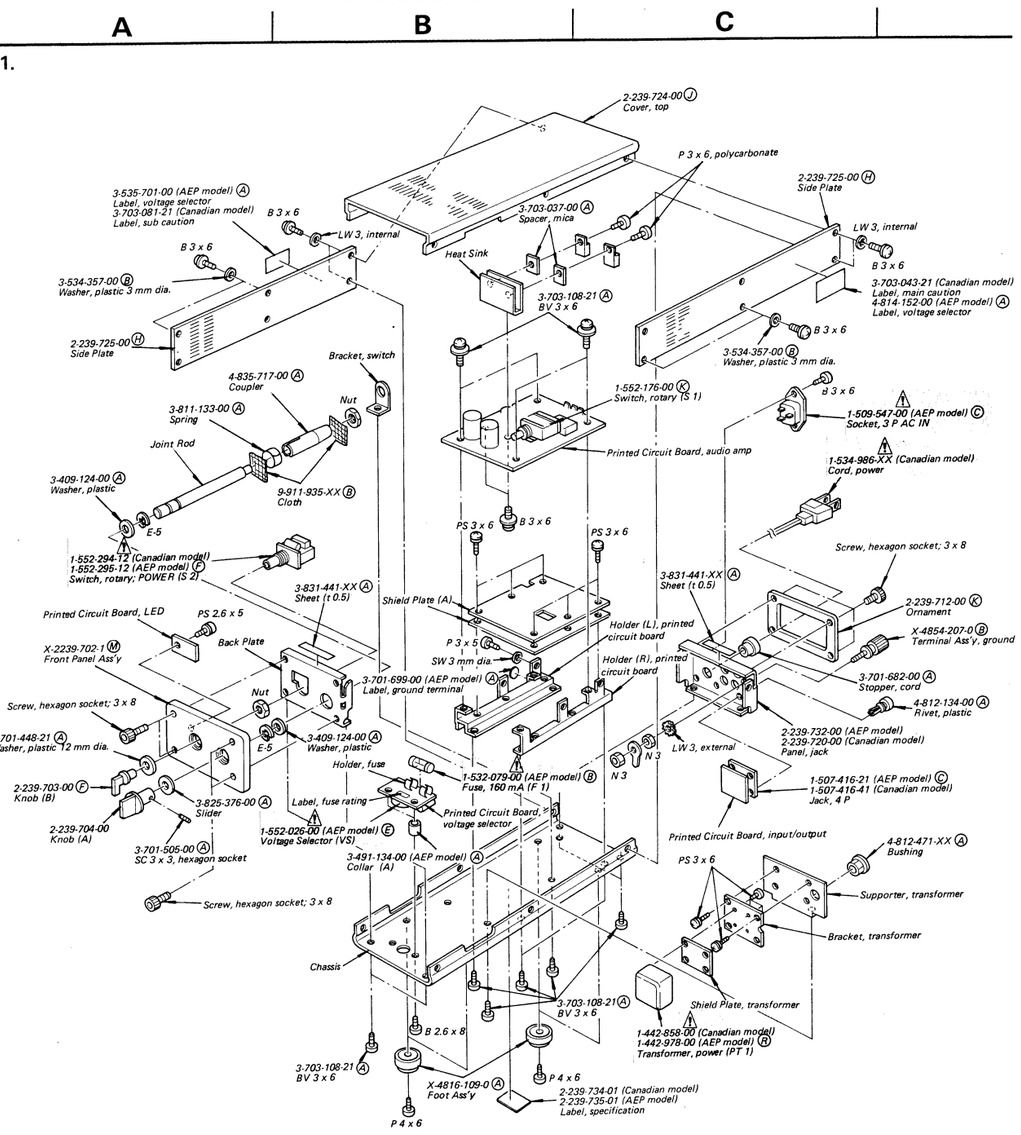
D504: VD1220



SECTION 4

EXPLODED VIEW

4-1.


2-239-724-00 (J) Cover, top
P 3 x 6, polycarbonate
2-239-725-00 (H) Side Plate
3-535-701-00 (AEP model) (A) Label, voltage selector
3-703-081-21 (Canadian model) Label, sub caution
B 3 x 6
LW 3, internal
3-703-037-00 (A) Spacer, mica
Heat Sink
3-703-108-21 (A) BV 3 x 6
3-534-357-00 (B) Washer, plastic 3 mm dia.
3-703-043-21 (Canadian model) Label, main caution
4-814-152-00 (AEP model) (A) Label, voltage selector
Bracket, switch
4-835-717-00 (A) Coupler
Nut
3-811-133-00 (A) Spring
Joint Rod
3-409-124-00 (A) Washer, plastic
9-911-935-XX (B) Cloth
E-5
1-552-176-00 (K) Switch, rotary (S 1)
1-509-547-00 (AEP model) (C) Socket, 3 P AC IN
Printed Circuit Board, audio amp
1-534-986-XX (Canadian model) Cord, power
PS 3 x 6
1-552-294-12 (Canadian model) 1-552-295-12 (AEP model) (F) Switch, rotary; POWER (S 2)
3-831-441-XX (A) Sheet (t 0.5)
Shield Plate (A)
Screw, hexagon socket; 3 x 8
2-239-712-00 (K) Ornament
X-4854-207-0 (B) Terminal Ass'y, ground
Printed Circuit Board, LED
PS 2.6 x 5
Back Plate
X-2239-702-1 (M) Front Panel Ass'y
P 3 x 5
SW 3 mm dia
Holder (L), printed circuit board
Holder (R), printed circuit board
3-701-699-00 (AEP model) (A) Label, ground terminal
3-701-682-00 (A) Stopper, cord
4-812-134-00 (A) Rivet, plastic
Nut
3-701-448-21 (A) Washer, plastic 12 mm dia.
3-409-124-00 (A) Washer, plastic
2-239-732-00 (AEP model) 2-239-720-00 (Canadian model) Panel, jack
LW 3, external
N 3
2-239-703-00 (F) Knob (B)
Holder, fuse
1-532-079-00 (AEP model) (B) Fuse, 160 mA (F 1)
1-507-416-21 (AEP model) (C) 1-507-416-41 (Canadian model) Jack, 4 P
3-825-376-00 (A) Slider
Label, fuse rating
2-239-704-00 Knob (A)
1-552-026-00 (AEP model) (E) Voltage Selector (VS)
Printed Circuit Board, voltage selector
Printed Circuit Board, input/output
4-812-471-XX (A) Bushing
3-701-505-00 (A) SC 3 x 3, hexagon socket
3-491-134-00 (AEP model) (A) Collar (A)
PS 3 x 6
Supporter, transformer
Screw, hexagon socket; 3 x 8
Bracket, transformer
Chassis
3-703-108-21 (A) BV 3 x 6
Shield Plate, transformer
B 2.6 x 8
1-442-858-00 (Canadian model) 1-442-978-00 (AEP model) (R) Transformer, power (PT 1)
P 4 x 6
X-4816-109-0 (A) Foot Ass'y
2-239-734-01 (Canadian model) 2-239-735-01 (AEP model) Label, specification

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Note:
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

SECTION 5

ELECTRICAL PARTS LIST

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	Part No.	Description
		SEMICONDUCTORS
		Transistors
Q101		Ⓑ 2SC1775
Q102		Ⓒ 2SC1811
Q201		Ⓑ 2SC1775
Q202		Ⓒ 2SC1811
Q301		Ⓒ 2SK42-2
Q302		Ⓒ 2SC1173
Q303		Ⓑ 2SC1775
Q304, 305		Ⓑ 2SA872
Q401		Ⓒ 2SK42-2
Q402		Ⓒ 2SA473
Q403		Ⓑ 2SA872
Q404, 405		Ⓑ 2SC1775
Q501–503		Ⓑ 2SC634A
		Diodes
D1		Ⓑ SEL103R
D301, 302 ⚠		Ⓑ 10E2
D303		Ⓑ EQB01-06
D401, 402 ⚠		Ⓑ 10E2
D403		Ⓑ EQB01-06
D501, 502 ⚠		Ⓑ 10E2
D503		Ⓑ EQB01-18
D504		Ⓑ VD1220

CAPACITORS

All capacitors are in μF and ceramic unless otherwise noted.
50 WV or less are not indicated except for electrolytics.
pF = μμF, elect = electrolytic

C1	⚠ 1-130-142-11	0.01	125 V	polyethylene	(Canadian model)
C1, 2	⚠ 1-115-148-11	Ⓒ 0.01	450 V	paper	(AEP model)

Ref. No.	Part No.	Description			
C101, 201	1-102-074-11	Ⓐ 0.001			
C102, 202, C103, 203	1-131-429-11	Ⓖ 470	3.15	tantalum	
C104, 204	1-104-129-11	Ⓒ 0.015	125 V	polystyrol	
C105, 205	1-130-113-11	Ⓑ 560 p		polystyrol	
C107, 207, C108, 208	1-131-295-11	Ⓒ 100	6.3 V	tantalum	
C109, 209	1-104-129-11	Ⓒ 0.015	125 V	polystyrol	
C110, 210, C111, 211	1-130-084-11	Ⓓ 2.2	100 V	polyethylene	
C112, 212, C113, 213	1-121-659-11	Ⓑ 2200	10 V	elect	
C301, 401 ⚠	1-123-067-11	Ⓓ 2200	25 V	elect	
C302, 402	1-131-428-11	Ⓕ 100	10 V	tantalum	
C303, 403	1-123-237-11	Ⓑ 33	50 V	elect	
C304, 404	1-129-927-11	Ⓑ 0.015	100 V	polyethylene	
C305, 405	1-102-975-11	Ⓐ 100 p			
C501	1-131-215-11	Ⓑ 1	35 V	tantalum	
C502	1-121-977-11	Ⓑ 220	10 V	elect	
C503	1-121-738-11	Ⓐ 10	50 V	elect	

RESISTORS

All resistors are in ohms and ½W carbon unless otherwise noted.

R101, 201	1-244-837-11	Ⓐ 33			
R102, 202	1-244-867-11	Ⓐ 560			
R103, 203, R104, 204	1-244-851-11	Ⓐ 120			
R105, 205	1-244-849-11	Ⓐ 100			
R106, 206	1-244-857-11	Ⓐ 220			
R107, 207	1-244-853-11	Ⓐ 150			
R108, 208	1-244-809-11	Ⓐ 2.2			
R109, 209	1-214-100-11	Ⓑ 47	¼W	±1%	metal oxide
R110, 210	1-224-885-11	Ⓐ 3.3 k			
R111, 211	1-224-864-11	Ⓐ 330			
R112, 212	1-224-841-11	Ⓐ 47			
R113, 213, R114, 214	1-224-905-11	Ⓐ 22 k			
R115, 215, R116, 216	1-224-841-11	Ⓐ 47			

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

SECTION 5
ELECTRICAL PARTS LIST

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*	*Description*
		SEMICONDUCTORS
		Transistors
Q101		Ⓑ 2SC1775
Q102		Ⓒ 2SC1811
Q201		Ⓑ 2SC1775
Q202		Ⓒ 2SC1811
Q301		Ⓒ 2SK42-2
Q302		Ⓒ 2SC1173
Q303		Ⓑ 2SC1775
Q304, 305		Ⓑ 2SA872
Q401		Ⓒ 2SK42-2
Q402		Ⓒ 2SA473
Q403		Ⓑ 2SA872
Q404, 405		Ⓑ 2SC1775
Q501–503		Ⓑ 2SC634A
		Diodes
D1		Ⓑ SEL103R
D301, 302 ⚠		Ⓑ 10E2
D303		Ⓑ EQB01-06
D401, 402 ⚠		Ⓑ 10E2
D403		Ⓑ EQB01-06
D501, 502 ⚠		Ⓑ 10E2
D503		Ⓑ EQB01-18
D504		Ⓑ VD1220
		CAPACITORS

All capacitors are in μF and ceramic unless otherwise noted.
50 WV or less are not indicated except for electrolytics.
pF = μμF, elect = electrolytic

C1	⚠ 1-130-142-11	0.01	125 V	polyethylene (Canadian model)
C1, 2	⚠ 1-115-148-11	Ⓒ 0.01	450 V	paper (AEP model)

Ref. No.	*Part No.*	*Description*		
C101, 201	1-102-074-11	Ⓐ 0.001		
C102, 202, C103, 203	1-131-429-11	Ⓖ 470	3.15	tantalum
C104, 204	1-104-129-11	Ⓒ 0.015	125 V	polystyrol
C105, 205	1-130-113-11	Ⓑ 560 p		polystyrol
C107, 207, C108, 208	1-131-295-11	Ⓒ 100	6.3 V	tantalum
C109, 209	1-104-129-11	Ⓒ 0.015	125 V	polystyrol
C110, 210, C111, 211	1-130-084-11	Ⓓ 2.2	100 V	polyethylene
C112, 212, C113, 213	1-121-659-11	Ⓑ 2200	10 V	elect
C301, 401 ⚠	1-123-067-11	Ⓓ 2200	25 V	elect
C302, 402	1-131-428-11	Ⓕ 100	10 V	tantalum
C303, 403	1-123-237-11	Ⓑ 33	50 V	elect
C304, 404	1-129-927-11	Ⓑ 0.015	100 V	polyethylene
C305, 405	1-102-975-11	Ⓐ 100 p		
C501	1-131-215-11	Ⓑ 1	35 V	tantalum
C502	1-121-977-11	Ⓑ 220	10 V	elect
C503	1-121-738-11	Ⓐ 10	50 V	elect
		RESISTORS		

All resistors are in ohms and ½W carbon unless otherwise noted.

R101, 201	1-244-837-11	Ⓐ 33		
R102, 202	1-244-867-11	Ⓐ 560		
R103, 203, R104, 204	1-244-851-11	Ⓐ 120		
R105, 205	1-244-849-11	Ⓐ 100		
R106, 206	1-244-857-11	Ⓐ 220		
R107, 207	1-244-853-11	Ⓐ 150		
R108, 208	1-244-809-11	Ⓐ 2.2		
R109, 209	1-214-100-11	Ⓑ 47 ¼W	±1 %	metal oxide
R110, 210	1-224-885-11	Ⓐ 3.3 k		
R111, 211	1-224-864-11	Ⓐ 330		
R112, 212	1-224-841-11	Ⓐ 47		
R113, 213, R114, 214	1-224-905-11	Ⓐ 22 k		
R115, 215, R116, 216	1-224-841-11	Ⓐ 47		

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*	*Description*		
R302, 402	1-224-877-11	Ⓐ 1.5 k		
R303, 403	1-224-825-11	Ⓐ 10		
R304, 404	1-244-881-11	Ⓐ 2.2 k		
R305, 307, R405, 407	1-244-873-11	Ⓐ 1		
R308, 408	1-244-877-11	Ⓐ 1.5 k		
R501	1-244-855-11	Ⓐ 180		
R502, 503	1-244-889-11	Ⓐ 4.7 k		
R504	1-244-897-11	Ⓐ 10		
R505	1-244-881-11	Ⓐ 2.2 k		
R506	1-244-897-11	Ⓐ 10		
R507	1-244-921-11	Ⓐ 100		
		SWITCHES		
S1	1-552-176-00	Ⓚ Rotary, cartridge impedance selector		
⚠	1-552-294-12	Rotary, POWER (Canadian model)		
⚠	1-552-295-12	Ⓕ Rotary, POWER (AEP model)		
		MISCELLANEOUS		
CP1	⚠ 1-101-534-00	Ⓒ Encapsulated Component (AEP model)		
F1	⚠ 1-532-079-00	Ⓑ Fuse, 160 mA (AEP model)		
MDL1, 2	A-2095-165-A	Ⓟ Module		
	1-442-858-00	Transformer, power (Canadian model)		
PT1	⚠ (			
	1-442-978-00	Ⓡ Transformer, power (AEP model)		
RY1	1-515-294-21	Ⓕ Relay, reed		
VS	⚠ 1-552-026-00	Ⓔ Voltage Selector (AEP model)		
	1-507-416-21	Ⓒ Jack, 4 p (AEP model)		
	1-507-416-41	Jack, 4 p (Canadian model)		
	⚠ 1-509-547-00	Ⓒ Socket, 3 p AC IN (AEP model)		
	⚠ 1-534-986-XX	Cord, power (Canadian model)		

ACCESSORIES & PACKING

Part No.	*Description*
1-551-315-00	Ⓗ Cord, connection; RK-112
2-239-728-00	Ⓒ Carton
2-239-730-00	Ⓑ Side Cushion
2-239-731-00	Ⓑ Cushion
2-502-809-00	Ⓐ Bag, plastic; set
3-701-623-00	Ⓐ Bag, plastic; printed matter
3-701-628-00	Ⓐ Bag, plastic
3-701-684-11	Ⓐ Card, voltage (AEP model)
3-703-112-01	Plug Guard (Canadian model)
3-770-100-11	Ⓒ Manual, instruction

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

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